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SAPC 9239
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OCT 1 1956

MEMORANDUM FOR: Contracting Officer

SUBJECT : System Four Read-Out Requirements and Philosophy

1. It will be necessary to duplicate both the magnetic and photographic data obtained. The field will duplicate the magnetic data but neither develop nor duplicate the photographic data. The photographic data will be projected so that each frame is the size of a microreader screen (roughly 30" square) and further analysis will be done by operators with scales.

2. While the magnetic data is being duped, an activity indicator will record signal activity and time. From this signal activity record two types of decisions concerning each data channel will be made by operators, (a) to examine the channel with the human ear as detector or (b) to make a copy of the channel for further analysis. The criteria for this decision will usually be signal density. It is predicted that the twelve data channels will be divided approximately equally into these two categories.

3. A fourteen-channel playback and an activity indicator will be used in the next step with four data channels (or two if four is not practical) as decided above, being fed into two three-channel duplicators and two channels being watched, one per operator, for signals below threshold, signals of unusual characteristics, etc. It is predicted that the fourteen channel tape must be run through three times to cover the twelve data channels. The duplicated channels will have time, frequency, A.G.C., R-L and other pertinent data fed into the third channel of the three-channel duplicator.

4. The channels watched by operators will be duplicated at their interesting points only on short sections of tape, carrying same data as listed in Paragraph 3 above on a three-channel tape.

5. The three-channel tapes will be further analyzed with three-channel playbacks accompanied by frequency read-out, R-L read-out, amplitude read-out, PRF read-out and an activity indicator.

6. The duping gear must make two duplicates, add ten seconds time pips, add voice minute announcements and automatically control the overlap problem between reels. The speeds shall be 3 3/4" and 15" per second, allowing four times normal speed when duping 3 3/4" per second tapes.

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This requirement is similar to the duping equipment of System One. The playback shall have a fourteen-channel transport that will take either the special 14" reel used in System Four or the standard 1" reel and only two dups are required. A mixer shall allow one operator to monitor any one or any two of the channels. Output shall be available for all fourteen channels for the activity indicator.

7. The segregating equipment shall consist of:

a. An activity indicator.

b. A fourteen-channel playback with two monitor outlets that can independently be set on any one or any two channels for aural inspection. Electrical outputs will be available from all channels for reproducing purposes. This playback shall have speeds of 3 3/4" and 15" per second.

c. A three channel reproducer that produces two channels of data and all related time, frequency and other data. This reproducer shall select the appropriate A.G.C. voltage and reinsert it into the data channel with compression as necessary to retain amplitude information.

8. The final analysis equipment shall consist of a three-channel playback, an activity indicator, a P.R.F. reader and a frequency reader. L-R, F.M. channel indication and picture synchronized data will be presented directly on the activity indicator.

9. There is attached hereto an operational sketch of read-out concept. In summary, this read-out system calls for three new items of equipment (over that developed for System One and Three read-out). They are:

a. Fourteen-channel duping equipment.

b. Fourteen-channel playback equipment (with circuitry for segregating the auxillary data for any four of the twelve data channels).

c. A frequency read-out box.

The System calls for the use of three items as developed for Systems One and Three read-out. They are:

a. Three-channel playback.

b. PRF indicator.

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c. Activity indicator. (This item as currently delivered is unfinished. As currently delivered, it satisfies Systems One and Three read-out requirements and is capable with additional plug-in units of fulfilling System Four read-out requirements.)

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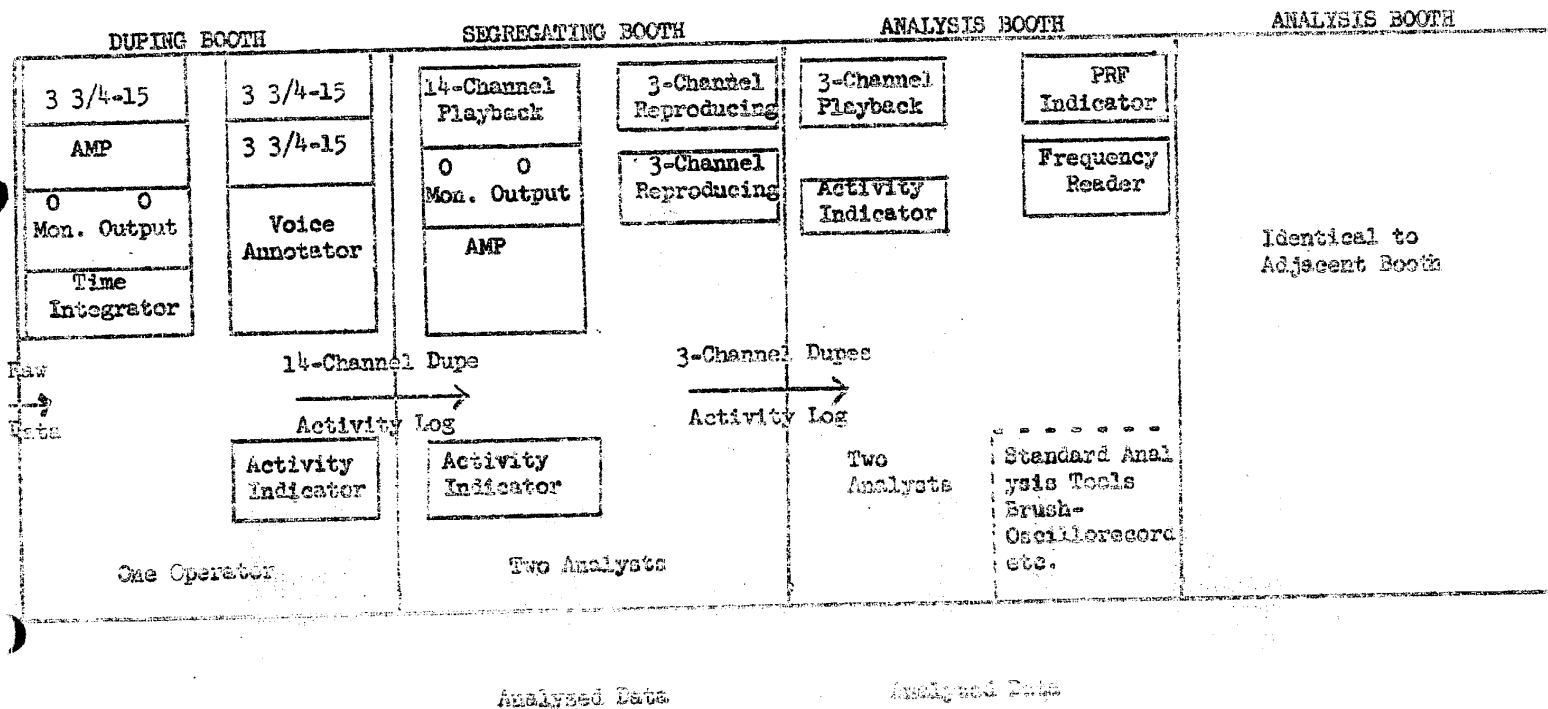
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OPERATIONAL SKETCH OF READ-OUT CONCEPT



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